Appendix A. Data sources

Households Below Average Income (HBAI)

Income as a measure of living standards

Most people would consider that well-being consists of more than a simple measure of material circumstances. However, even if we wanted to, it would be extremely hard to define an objective index of well-being, let alone to measure it. The main approach to measuring living standards taken in the government's HBAI statistics is to focus solely on material circumstances and to use household income as a proxy for that.

Even as a measure of material living standards, the HBAI income measure has some important limitations. There is some evidence of under-reporting of income in the HBAI data, particularly among those households with extremely low reported incomes.[14] Even for those households whose income is measured correctly, HBAI provides a 'snapshot' measure – reflecting actual, or in some cases 'usual', income at around the time of the Family Resources Survey interview. Measuring income in this way means the HBAI income statistics capture both temporary and permanent variation in income between individuals, but the latter would generally be regarded as a better measure of their relative welfare. For example, having a temporarily low income is unlikely to have severe consequences for current material living standards if individuals are able to draw on previously accumulated wealth. Statistics based upon current incomes will attribute the same level of welfare to people with the same current income, regardless of how much savings or other assets they have, or how much they spend. Consumption would arguably make a better measure of material well-being, but reliable data can be harder and more expensive to collect. Using consumption as the measure of well-being can change our interpretation of who is 'poor' and how rates of poverty have changed over time.[15]

The treatment of housing costs

The government's HBAI statistics provide information on two measures of income. One measure captures income before housing costs are deducted (BHC) and the other is a measure after housing costs have been deducted (AHC). The key housing costs captured in the HBAI data are rent payments and mortgage interest payments, but they also include water rates,

[14] See Brewer, Etheridge and O'Dea (2017).
[15] See Brewer, Goodman and Leicester (2006), Brewer and O'Dea (2012), Brewer, Etheridge and O'Dea (2017) and Office for National Statistics (2018).

community water charges, council water charges, structural insurance premiums for owner-occupiers, and ground rents and service charges. Mortgage capital repayments are not included, on the basis that these represent the accumulation of an asset (they increase net housing wealth) and are therefore better thought of as a form of saving than as a cost of housing. Costs such as maintenance, repairs, and contents insurance are also not included.

When looking at changes in average living standards across the population as a whole, there is usually a strong case for focusing on income measured BHC. This is because most individuals exercise a considerable degree of choice over housing cost and quality, at least in the medium and long term, and for those individuals housing should be treated as a consumption good like any other (i.e. the amount that households choose to spend on it should not be deducted from income). For instance, consider two households with the same BHC income, one of which decides to spend a larger fraction of that income on a larger house in a better neighbourhood, while the other has different preferences and chooses to spend the difference on other things. On an AHC basis, the former household would be considered poorer, but their living standards may be comparable.

There are, however, a number of reasons to focus on income measured AHC in certain circumstances.

First, income measured AHC may provide a better indicator of the living standards of those who do not face genuine choices over their housing, particularly if housing cost differentials do not accurately reflect differences in housing quality. This is likely to be the case for many in the social rented sector, where individuals tend to have little choice over their housing and where rents have often been set with little reference to housing quality or the prevailing market rents.

Second, the existence of housing benefit means that measuring income AHC has an advantage over BHC as a measure of living standards for housing benefit recipients. This is because housing benefit reimburses individuals specifically for their rent. Consider a household with no private income whose rent increases by £10 per week. This might trigger a £10 increase in housing benefit entitlement to cover the rent increase. Hence, AHC income would remain unchanged but BHC income would increase by £10 per week. Therefore, where rent changes do not reflect changes in housing quality – for example, when they simply reflect changes in the rules governing social rents – the subsequent changes in BHC (but not AHC) income can give a misleading impression of the change in living standards of households on housing benefit.

Third, measuring income AHC may be more appropriate than BHC when comparing households that own their home outright (and so pay no rent or mortgage interest costs) with those that do not. On a BHC basis, an individual who owns their house outright will be treated as being as well off as an otherwise-identical individual who is still paying off a mortgage; an AHC

measure, though, would indicate that the former was better off.[16] This is particularly important when comparing incomes across age groups – pensioners are much more likely to own their homes outright than working-age adults.

Fourth, comparing changes in AHC incomes may provide better information about relative changes in living standards when some households have seen large changes in their housing costs that are unrelated to changes in housing quality. This is particularly relevant when looking at the period between 2007–08 and 2009–10, as rapid falls in mortgage interest rates reduced the housing costs of those with a mortgage significantly, while the housing costs of those who rent their homes (or own them outright) were not directly affected. When incomes are measured BHC, changes over time in the incomes of all households are adjusted for inflation using a price index that accounts only for *average* housing costs. This will understate the effect of falling housing costs on living standards for those with a mortgage and overstate it for those without a mortgage. Changes in income measured AHC do not suffer from this issue, since changes in housing costs are accounted for by subtracting each household's actual housing costs from its income. This difference is important to bear in mind when looking at changes in poverty and inequality. Those towards the bottom of the income distribution (around the poverty line), as well as the youngest and oldest adults, are less likely than average to have a mortgage.

Income sharing

To the extent that income sharing takes place within households, the welfare of any one individual in a household will depend not only on their own income, but also on the incomes of other household members. By measuring income at the household level, the HBAI statistics implicitly assume that all individuals within the household are equally well off and therefore occupy the same position in the income distribution. For many households, this assumption provides a reasonable approximation – for example, many couples benefit roughly equally from income coming into the household, no matter who the income is paid to. For others, it is unlikely to be appropriate. Students sharing a house are one probable example. Perfect income sharing is by no means the only 'reasonable' assumption that one could make: for example, one could effectively assume that there is complete income sharing *within* the different benefit units[17] of a household but not *between* them, by measuring incomes at the benefit unit level rather than at the household level (and making an assumption about how housing costs are split across benefit

[16] A conceptually better solution to this problem would be to impute an income from owner-occupation and add this to BHC income. Unlike the AHC measure, this would also capture the benefits to individuals of living in better-quality housing. See Brewer and O'Dea (2012) for an example of such an imputation procedure.

[17] Benefit units are the level at which benefits are paid to people. A benefit unit can be either a single person or a couple, plus any dependent children of that single person or couple. For this reason, a benefit unit is frequently described as a 'family'. However, people living together who are related can be in two separate benefit units. For example, a household composed of a couple living with one of their parents would be two separate benefit units, as would a household composed of two adult siblings living together.

units). However, given the data available, perfect income sharing is one of the least arbitrary and most transparent assumptions that could be made.

Comparing incomes across households

Controlling for household size and structure is important when comparing living standards across households. If two households, one composed of a single adult and the other composed of a couple with two children, both have the same total income, the living standard of the couple with children will usually be significantly lower than that of the single adult, as the larger household normally has a greater need for material resources. Therefore, if household income is to reflect the standard of living that household members experience, and if we are to compare these incomes across different household types, then some method is required to adjust incomes for the different needs that different households face.

The official HBAI income statistics currently use the modified OECD equivalence scale for BHC incomes, and an AHC variant from the Department for Work and Pensions (DWP), shown in Table A.1. These equivalence scales are used to adjust incomes on the basis of household size and composition. For example, when income is measured before housing costs, the OECD scale implies that a single person would require 67% of the income that a childless couple would require to attain the same standard of living. So, to get the equivalent income of that single person, we divide their actual income by 0.67. This process is referred to as 'income equivalisation'. Having equivalised household incomes, cash income figures are expressed as the equivalents for a childless couple, i.e. a household's income is expressed as the amount that a childless couple would require to enjoy the same standard of living as that household.

Table A.1. Modified OECD equivalence scales

	BHC equivalence scale	AHC equivalence scale
First adult	0.67	0.58
Spouse	0.33	0.42
Other second adult	0.33	0.42
Third and subsequent adults	0.33	0.42
Child aged under 14	0.20	0.20
Child aged 14 and over	0.33	0.42

The modified OECD scale only takes into account the ages and number of individuals in the household, but there may be other characteristics affecting a household's needs. An important example of these would be the disability or health status of household members. The conventional methodology in HBAI would place a household receiving disability benefits higher up the income distribution than an otherwise-equivalent household without such benefits. But if this higher level of income only compensates the household for the greater needs it has or the extra costs it faces, then the standard of living of this household may be no higher.[18]

Sample weighting, and adjusting the incomes of the 'very rich'

The incomes analysed in this report are derived from the Family Resources Survey (FRS). These surveys are designed to provide a broadly representative sample of households in Great Britain until 2001–02 (i.e. not including Northern Ireland), and in the whole United Kingdom from 2002–03 onwards. However, because they are voluntary surveys, there is inevitably a problem of households not answering them, and such non-response may differ according to family type and according to income. This 'non-response bias' is dealt with in two ways. First, weights are applied to the data to ensure that the composition of the sample (in terms of age, sex, partnership status, region and a number of other variables) reflects the true UK population.[19] For example, if there are proportionately fewer lone parents in the sample than there are in the population, then relatively more weight must be placed upon the data from those lone parents who actually do respond.

Second, a special adjustment is applied to correct for the particular problems in obtaining high response rates from individuals with very high incomes and for the volatility in their reported incomes. This adjustment uses projected data from HMRC's Survey of Personal Incomes (SPI) – a more reliable source of data for the richest individuals based on income tax returns.[20] Individuals with an income above a very high threshold are assigned an income level derived from the SPI, which is an estimate of the average income for people above that threshold in the population (the threshold and replacement income value are set separately for pensioners and non-pensioners). Note that this procedure will therefore not capture the *inequality* within the very richest section of the population. The weights referred to above are also adjusted to ensure that the number of households containing very high-income individuals in the weighted data is correct. There is no corresponding correction for non-response, or for misreporting of incomes, at the lower end of the income distribution, meaning caution should be used when considering people with the very lowest incomes.

[18] See also section 5.3 of Brewer et al. (2008).
[19] See Department for Work and Pensions (2022a).
[20] See Burkhauser et al. (2018) for an analysis of the limitations of this adjustment and a discussion of alternatives.

Adjusting for inflation

All of the description of the HBAI methodology so far sets out how, following the government's HBAI methodology, we measure living standards in any one year. However, because of inflation, the same cash incomes do not bring the same purchasing power over time. It is therefore necessary to adjust for inflation and express all figures in real terms, which we do in the prices of the latest year of data (2020–21 in this report).

We account for inflation using variants of the Consumer Prices Index (CPI). For comparing BHC measures of income over time, we use a variant of the standard CPI that includes owner-occupiers' housing costs (mortgage interest payments, and insurance and ground rent for owner-occupiers); for AHC measures, we use a variant of the CPI that excludes all housing costs (including rent and water costs, which are part of the standard CPI). These variants are available from the Office for National Statistics back to 1996 and 2000 respectively. Before that, we use an approximation to those indices generated by combining RPI-based indices that are available back to 1961 with an estimate of the historic 'formula effect' (the amount by which the Retail Prices Index overstates inflation).[21]

Understanding Society: The UK Household Longitudinal Study

Understanding Society, also known as the UK Household Longitudinal Study, is a panel study, run by the Institute for Social and Economic Research at the University of Essex. The survey is asked in waves, with each wave lasting two years, and a new wave starting each year, so that the waves overlap. The main survey asks a large number of households a wide range of questions, with all household members either interviewed directly or (in the case of younger children) asked about. Households are invited to be re-interviewed in each wave, every year, allowing them to be tracked over time. The survey asks a large series of questions, which include variables that allow the calculation of net equivalised household income, in a similar way to HBAI. The most recent full wave to be released was wave 11, covering 2019–20.

The English Longitudinal Study of Ageing

In an accompanying working paper to this report, which is published as part of this project, Cribb, Karjalainen and Waters (2022) use data from three survey data sets to study the living standards of working-age disability recipients: the Family Resources Survey, the UK Household Longitudinal Study and the English Longitudinal Study of Ageing (ELSA). The FRS and

[21] The resulting 'deflators' are available online at https://ifs.org.uk/uploads/Incomes%2C%20poverty%20and%20inequality.xlsx.

UKHLS are described above; here we describe the features of ELSA (see Steptoe et al. (2013) for more details). ELSA is a longitudinal study of people aged 50+ in England, and participants are surveyed every other year, starting in 2002–03, with the most recent wave (wave 9) covering 2018–19.

ELSA contains detailed information on around 10,000 individuals' background characteristics, economic outcomes (including labour market participation, income and wealth), subjective measures of financial difficulties, a variety of measures of health and disability (including diagnoses of various conditions and measures of difficulties with mobility and activities of daily living) and a range of other information on participation in different activities in society. It is designed to be – in general – similar to the related studies in the United States (the Health and Retirement Study) and in Europe (the Survey of Health, Ageing and Retirement in Europe).